

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:)	Group Art Unit: 1773
)	
Jin Yeol KIM)	Examiner: ZACHARIA, Ramsey E.
)	
Serial No.: 10/821,062)	Confirmation No.: 9643
)	
Filed: 04/07/2004)	
)	
For: ANTI-REFLECTION FILM)	
COMPRISING CONDUCTIVE POLYMER)	
LAYER AND PRODUCING METHOD)	
THEREOF)	

Mail Stop RCE
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT UNDER 37 C.F.R. §1.116

Sir:

In response to the Office Action dated March 30, 2006 in connection with the above-identified application, please enter and consider the following amendments and remarks:

Amendments to the Claims

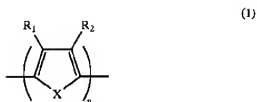
Please amend claims 2 and 4 as shown below. Please insert new claims 12-15 as shown below.

1. (Canceled)

2. (Currently amended) An anti-reflection film comprising:

(i) a substrate consisting of a transparent polymer film; ~~and~~

(ii) at least one conductive layer formed by depositing a heterocyclic conjugated polymer of the following structural formula (1) on at least one surface of the substrate:



wherein X represents O, Se, [[S]] or NH; and R₁ and R₂, which may be the same or different, each independently represents H, a C₃-C₁₅ alkyl group, a C₃-C₁₅ alkylether group, an halogen atom, or a substituent which forms a cyclic structure while containing hydrocarbon together with at least one atom selected from the group consisting of S and O, ~~which additionally comprises;~~
and

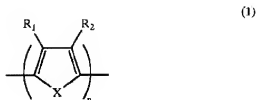
(iii) a high refractive thin film layer between the substrate and the conductive layer, the high refractive thin film layer having a higher refractive index than the conductive layer.

3. (Original) The anti-reflection film of claim 2, which additionally comprises a hard coating layer between the substrate and the high refractive thin film layer, the hard coating layer serving to increase the surface hardness of the substrate.

4. (Currently amended) An anti-reflection film comprising:

(i) a substrate consisting of a transparent polymer film; ~~and~~

(ii) at least one conductive layer formed by depositing a heterocyclic conjugated polymer of the following structural formula (1) on at least one surface of the substrate:



wherein X represents O, Se, [[S]] or NH; and R₁ and R₂, which may be the same or different, each independently represents H, a C₃-C₁₅ alkyl group, a C₃-C₁₅ alkylether group, an halogen atom, or a substituent which forms a cyclic structure while containing hydrocarbon together with at least one atom selected from the group consisting of S and O, ~~which additionally comprises,~~
and

(iii) a low refractive thin film layer on the conductive layer, the low refractive thin film layer having a lower refractive index than the conductive layer.

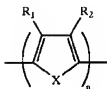
5. (Original) The anti-reflection film of claim 3, which additionally comprises a low refractive thin film layer on the conductive layer, the low refractive thin film layer having a lower

refractive index than the conductive layer.

6. (Withdrawn) A method for producing an anti-reflection film, which comprises:

a first step of applying an oxidizing agent on at least one surface of a substrate consisting of a transparent polymer film;

a second step of subjecting a heterocyclic conjugated monomer of the following structural formula (1) to vapor phase polymerization on the substrate applied with the oxidizing agent and then removing an unreacted portion of the oxidizing agent, thereby forming at least one conductive layer made of the resulting heterocyclic conjugated polymer of the structural formula (1):

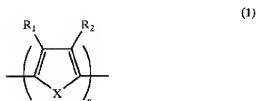


(1)

wherein X represents O, Se, S or NH; and R₁ and R₂, which may be the same or different, each independently represents H, C₃-C₁₅ alkyl, C₃-C₁₅ alkylether, an halogen atom, or a substituent which forms a cyclic structure while containing hydrocarbon together with at least one atom selected from the group consisting of S and O.

7. (Withdrawn) The method of claim 6, which additionally comprises forming a high refractive thin film layer having a higher refractive index than the conductive layer on the substrate, before the first step.

8. (Withdrawn) The method of claim 6, which additionally comprises forming a low refractive thin film layer having a lower refractive index than the conductive layer on the conductive layer, after the second step.
9. (Withdrawn) The method of claims 6, which additionally comprises adding a host polymer to the oxidizing agent.
10. (Withdrawn) The method of claims 7, which additionally comprises adding a host polymer to the oxidizing agent.
11. (Withdrawn) The method of claims 8, which additionally comprises adding a host polymer to the oxidizing agent.
12. (New) An anti-reflection film comprising:
- (i) a substrate consisting of a transparent polymer film;
 - (ii) at least one conductive layer formed by depositing a heterocyclic conjugated polymer of the following structural formula (1) on at least one surface of the substrate:



wherein X represents O, Se, S or NH; and R₁ and R₂, which may be the same or different, each independently represents H, a C₃-C₁₅ alkyl group, a C₃-C₁₅ alkylether group, an halogen atom, or

a substituent which forms a cyclic structure while containing hydrocarbon together with at least one atom selected from the group consisting of S and O;

(iii) a high refractive thin film layer between the substrate and the conductive layer, wherein the high refractive thin film layer has a higher refractive index than the conductive layer; and
(iv) a hard coating layer between the substrate and the high refractive thin film layer, the hard coating layer serving to increase the surface hardness of the substrate.

13. (New) The anti-reflection film of claim 12, which additionally comprises a low refractive thin film layer on the conductive layer, the low refractive thin film layer having a lower refractive index than the conductive layer.

14. (New) The anti-reflection film of claim 2, wherein R_1 and R_2 independently represent a substituent which forms a cyclic structure while containing hydrocarbon together with S.

15. (New) The anti-reflection film of claim 4, wherein R_1 and R_2 independently represent a substituent which forms a cyclic structure while containing hydrocarbon together with S.

REMARKS

Claims 2-15 are pending in the application. Claims 6-11 have been withdrawn from further consideration as being directed to non-elected invention. Support for the amended claims 2 and 4 can be found at page 7 in the specification. Support for the newly added claims 12-15 can be found at page 7 in the specification and in claims 2-4 as originally presented. Accordingly, no new matter has been inserted into the application.

Election/Restrictions

Applicants note the Examiner's intention that when a restriction between products and processes have been made, applicant is offered rejoinder of all methods of making and methods of using a product whenever an elected product or composition claim is found allowable, as long as the method claims are commensurate in scope with the product claims.

The Examiner is respectfully requested to rejoin the currently withdrawn process claims 6-11 to the product claims 2-5 and 12-15 once these claims are found to be allowable in accordance with the Rejoinder Rules under MPEP 821.04.

Rejection Under 35 USC § 103(a) over Yasunori (JP 05-307,104) in view of Fujimaki (US 6,191,837 B1)

Claims 2-5 have been rejected as being obvious over Yasunori in view of Fujimaki. Applicants traverse this rejection. Reconsideration and withdrawal thereof are respectfully requested.

Distinctions of the presently claimed invention over the cited references have been discussed in the Applicants' previous reply of February 1, 2006. In response, the Examiner has maintained the rejection.

In particular, the Examiner states that the electroconductive film of Fujimaki may comprise a polythiophene having a structure that reads on formula (1) of claims 2 and 4 in the present application. Applicants respectfully disagree. However, to expedite the prosecution of the present application and issuance of the patent, claims 2 and 4 have been amended to distinguish the presently claimed invention further from Yasunori and Fujimaki. Specifically, "S" has been removed from X of formula (1) in the amended claims 2 and 4. Therefore, the Fujimaki reference fails to be relevant to the presently claimed invention. Accordingly, it is believed that the presently claimed invention is not obvious over the cited references.

Conclusion

It is believed that the application is now in condition for allowance. Applicant requests the Examiner to issue a Notice of Allowance in due course. The Examiner is encouraged to contact the undersigned to further the prosecution of the present invention.

The Commissioner is authorized to charge JHK Law's Deposit Account No. **502486** for any fees required under 37 CFR §§ 1.16 and 1.17 and to credit any overpayment to said Deposit Account No. **502486**.

Serial No. 10/821,062

Patent
20040-00013

(Previously 2097-3-23)

Respectfully submitted,

JHK Law

Dated: July 31, 2006 (Monday)

By: /Joseph Hyosuk Kim/
Joseph Hyosuk Kim, Ph.D.
Reg. No. 41,425

P.O. Box 1078
La Canada, CA 91012-1078
(818) 249-8177 - direct
(818) 249-8277 - fax